### General Material Handling
- Use of Linear Servo Motor and PLC for precise control.
- Efficient material handling via Advanced Synchronous Control.

### Automotive Assembly
- Improved vibration suppression functions for quieter operation.
- Enhanced motion control for smoother assembly processes.

### Machine Tool Loading
- Linear Servo Motor ensures accurate positioning.
- Simplified construction for multi-head applications.

### Aircraft Assembly
- Reduced machine vibration for high-precision tasks.
- Synchronized movements of Axis 1 and 2 for efficient assembly.

### Scanning Device
- Robust control flow for high-precision scanning operations.
- Enhanced stability with Advanced Synchronous Control.

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#### System Example

**Application**
- General material handling
- Automotive assembly
- Machine tool loading
- Aircraft assembly
- Scanning device

**Mitsubishi Solution**
- Motion CPU: Q172D5CPU
- Servo amplifier: MR-J4-B, MR-J4-W2-B
- Servo motor: HG-KR
- Linear servo motor: LM-H3
- Safety signal module: Q173DSXY
- Main base unit: Q35DB
- GOT: GT1665HS-VTBD
- I/O module: QX40, QY40P

**Setup Procedure**
1. System Configuration Setting
2. Parameter Settings for Linear Control
3. Parameter Settings for Vibration Suppression Control
4. Program Edit
**Offering the Best Solution**

### Solution 1: Vibration Suppression Functions

**Advanced Vibration Suppression Control II**

Due to vibration suppression algorithm which supports three-inertia system, two types of low frequency vibrations are suppressed at the same time. Adjustment is performed with one-touch operation. This function is effective in suppressing vibration at the end of an arm and in reducing residual vibration in a machine.

**Machine Resonance Suppression Filter**

With advanced filter structure, applicable frequency range is expanded from between 100Hz and 4500Hz to between 10Hz and 4500Hz. Additionally, the number of simultaneously applicable filters is increased from two to five, improving vibration suppression performance of machine.

### Solution 2: Linear Servo Motor

**Controlling the Multi-head Freely and Dynamically**

The multi-head system can be structured with the linear servo motor. (maximum speed: 3m/s (LM-H3 series), max. thrust: 150N to 7200N, compatible with a variety of serial interface linear encoders with resolution range from 0.005μm and up.)

Each of the motor coils can be controlled individually by different commands. This simple structure is suitable best for the machines requiring shorter tact time.

### Solution 3: Tandem Configuration

**Highly Synchronized Operation Between Two Axes**

The parallel drive (tandem configuration) is achieved by outputting the same data to the cams using the advanced synchronous control.
**Setup Procedure**

**Step 1**
Set the servo amplifier and servo motor.

![Image](image1.png)

**Step 2**
Parameter Settings for Linear Control
Set just the Basic and Extension settings for linear control.

![Image](image2.png)

**Step 3**
Parameter Settings for Vibration Suppression Control
Select "3 inertia mode" in the "Vibration suppression control mode selection" to enable the "Advanced Vibration Suppression Control II".

![Image](image3.png)

**Step 4**
Program Edit
Create the Motion SFC program and the servo program.

![Image](image4.png)
Not Only limited to Rotary Servo Motors, but Linear Servo Motors, and Direct Drive Motors Can Be Driven

Flexible Applicable for Various Control and Driving Systems

1-axis/2-axis/3-axis Servo Amplifiers

For SSCNET III/H compatible servo amplifiers, 2-axis and 3-axis types are available in addition to 1-axis type. Flexible system is configured accordingly with the number of control axes.

Linear Servo Motor

Four series are available depending on applications.

Compatible Servo Motors

MR-J4 series servo amplifier operates rotary servo motors, linear servo motors*, and direct drive motors* as standard.

*MR-J4-A will be compatible in the future.

Energy-saving Achieved by LM-H3 Linear Servo Motor Series

LM-H3 series achieves reduction of motor driving power due to optimized magnet form and new magnetic design by 25%*. Conservation of power is achieved for machine. As compared to the prior model, the motor coil is lighter by approximately 12%*. The energy required to drive the moving part is reduced.

For LM-H3, widths of the motor coil and the magnet are reduced by 10% from the prior model. Increased thrust to current ratio results in using the servo amplifier in smaller capacity, contributing to more compact machine (the reduction of materials).

Reduced Motor Driving Power

Space Saving

[] Reduced by 25%

LM-H2

LM-H3

Maintenance Easier Troubleshooting with 3-digit Alarm Display

In MR-J4 series, servo alarms are displayed in 3 digits. Troubleshooting at alarm occurrence is easy.

For the undervoltage alarm, whether the alarm occurred in the main or the control circuit is identified by the alarm No.

LM-F series

(Core type (natural/liquid cooling))

Material handlings

Press feeders

Rated thrust:

300N to 1200N (natural cooling)

600N to 2400N (liquid cooling)

Max. thrust:

1800N to 7200N (natural/liquid cooling)

LM-K2 series

(Core type with magnetic attraction counter-force)

LCD assembly systems

Semiconductor mounting systems

Rated thrust:

120N to 2400N

Max. thrust:

300N to 6000N

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